CSC WINTER WORKSHOP JUNE 21/22, 2012

IS INCREMENTAL SILVICULTURE A MIRACLE OR A MYTH?

WHAT WORKS ON THE COAST OF BC?

IT DEPENDS!

INTRODUCTION

The question posed, "Incremental Silviculture, Miracle or Myth?" was not answered and probably cannot be until all the past research and operational information regarding spacing, commercial thinning, pruning and responses to fertilizer application at different ages is analyzed together with the appropriate cost data. Perhaps we also need to define "works" before trying to answer. Do we mean looks good, positive financial return or something else?

However, one message came through loud and clear - we need stand and forest level objectives. Without objectives, we will continue to ask the same silvicultural questions in 50 years time, those same questions we asked 50 years ago and the same questions that were posed during this workshop!

Growth & yield prediction models such as TASS, TIPSY, SYLVER and FAN$IER to which we were introduced by Jim Goudie at the 3rd UBC Research Forest stop on the second day, are becoming more reliable as additional empirical data become available from permanent growth & yield (G&Y) plots in managed and unmanaged stands[1]

A description of FAN$IER outlined by Mario de Lucca below:

FAN$IER

The Financial Analysis of Silviculture Investment and Economic Return (FAN$IER), was developed by the Stand Development Modelling Group to provide improved economic analysis options to help foresters and planners to evaluate the impact of selected silviculture events on the discounted net value returned by forest products at the stand level from "plant to plank".

The current FAN$IER include updated costs, prices, methods, financial assumptions, and improved batch processing capabilities. Forest products available in this version include dimensional lumber distribution by grade (with and without juvenile wood content adjustments), mill residues (e.g. chips, bark, sawdust, shavings, and trims), and log distribution by grade, carbon and carbon dioxide equivalent (CO2e). New FAN$IER Batch processing enhancements include the capability to create any number and combination of sequential batch runs by selecting input of one or more run regime files generated by either TIPSY, TASS or TASS III – GUI.

A beta version of the Table Interpolation for Stand Yields (TIPSY) that includes FAN$IER is available for testing on request and the final operational release for this version will be available by October 31, 2012.

[1] http://www.for.gov.bc.ca/hre/gymodels/tipsy/features.htm

In the future judicious use of these models may better allow us to answer the miracle or myth question and allow us to manage our forests towards our objective(s).

WHAT DID WE LEARN ABOUT.....?

PLANTING DENSITY

Our initial planting densities may be too low on our most productive sites, not making full use of the growth potential and affecting wood quality negatively unless pruning is prescribed however...

- ✓ planting density depends on projected age at harvest.
- ✓ optimum planting density also depends on the future and relative value of fibre (what will we be able to economically remove from the site?)

Western red cedar (Cw) maintained vigour and stability across a wide range of stocking levels and resulted in volumes exceeding that of Coastal Douglas-fir (Fdc) at age 50 on the UBC Research Forest site.

In mixed stands of Fdc and Western hemlock (Hw), the total and merchantable volumes at age 40 were greater at the higher stocking levels than in pure stands of Fdc.

SPACING

ALEC & JEFF @ OVERSTOCKED (24000sph) FREE GROOWING STAND

Spacing should only be necessary in areas of dense natural regeneration or those with excessive natural ingress which, if untreated, will develop into a dense, even-aged, unproductive stands.

The decision to space overstocked stands should made before lower branch lift begins.

Spacing may be prescribed to create stand structure.

COMMERCIAL THINNING

Commercial thinning on the Mission Municipal Forest (MMF) from 1999-2002 in a 55 year old Fdc, Cw, Hw stand was arguably profitable as the $453/ha realized did not include overhead, layout, administration or inventory.

Thinning from below (removing the small diameter component) did not appear to initiate a growth response in the residual stand after 10 years.

COMMERCIAL THINNING @ UBC RESEARCH FOREST

Thinning a naturally regenerated Fdc leading 70 year old stand in the UBC Research Forest in 2011 netted a profit of $4243/ha. Market timing was an important factor in this operation. Tenure also plays a role.

PRUNING

A 24 ha plantation of Cw on the Mission Municipal Forest was pruned in 1992 followed by a second lift in 1999. Approximately 9200 trees or 383 trees/ha were targeted. Approximate cost of both lifts is $5.16/tree or $1976/ha. Age of plantation is unknown.

LOUISE @ 2 LIFT CW PRUNED PLANTATION ON MISSION MUNICIPAL FOREST

It was postulated at one of the pruned stands that pruning Cw may reduce the tendency of the species to buttress.

Pruning of Cw may also increase in the amount of natural rot-resistant mature wood below the live crown.

There were numerous discussions albeit without conclusions, at various sites, regarding the economic merits of pruning. Use of sophisticated growth models with financial capabilities such as FAN$IER, could help determine the appropriate stands for pruning.

Clear wood criteria for Fdc, Cw and Hw were distributed. If future stands are harvested at rotation age +/-50 years, these criteria will not be met.

FERTILIZER APPLICATION

On the Mission Municipal Forest a 60 year natural stand of Fdc^{35},Cw^{35} Hw^{30} was manually fertilized at a rate of 250 kg/ha urea 3 years after a commercial thinning. The cost was $100/ha to treat 150 sph. No apparent response after 6 years.

There is funding available to fertilize appropriate stands through the Land Based Investment Fund, following specific guidelines[2]. Fertilizer is applied aerially on most of these stands.

Both the CSC 2012 winter and Summer Workshops did not provide any **empirical operational** evidence to support the economic benefit of fertilization. However, economic analyses using the Return on Investment tools available at http://lbis.forestpracticesbranch.com/ROI_070615/main.html indicate substantial returns, in some circumstances, depending on the stand characteristics.

[2] http://www.for.gov.bc.ca/ftp/hfp/external/!publish/fft_standards_on_cms_web/Fertilization/FertilizationStandard/Stand_selection-Province_October_2011.pdf